Statement of

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Administrator

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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Mr. Chairman, if I may add briefly to Dr. Newell's statement, I would like to emphasize some significant factors inherent in NASA's relationships with the universities which are of particular significance to our national strength in science, technology, and in their use.

The provisions of the National Aeronautics and Space Act of 1958 established the basic policy that the U.S. would utilize its rockets, data acquisition system, and management capabilities in spacecraft developments, to work with scientists to gain new knowledge about the requirements for operational systems in space. It was recognized then, and experience has shown, that the utilization of existing national resources would prove inadequate and new ones must be developed. This was NASA's job, and we have carried it out in a manner to afford an opportunity for the most able minds in our universities to design and send into space experiments which would reveal new data beyond any which could be produced in earth-bound laboratories.

It was also recognized that research in space would differ significantly from most scientific research conducted previously under a laboratory system within which single elements were isolated and measured individually. Space research offered many opportunities for a multidisciplinary approach to problems of both measurement and interpretation of scientific data. Complex multi-purpose spacecraft made possible the measurement of a number of elements of the environment more or less simultaneously and the evolution of interpretive systems through which the data gathered could then be related.

In the conduct of its mission NASA has sought to spread the problems of understanding the space environment over a large number of able minds in universities throughout the nation and then to utilize the knowledge gained to enable the engineers to design more efficient instruments and spacecraft capable of coping with the environment in the performance of future work. This approach has not only maximized the understanding of and solution of problems relating to the environment, but because the work is carried out in close association with graduate and post-graduate education this nation has benefitted from the critical thought and analysis of brilliant students as well as professors. At the same time the students

have received training in very advanced areas of research under conditions which serve to enhance their potential for contributing to the research efforts required by the nation in the years ahead.

In carrying out these efforts NASA had the benefit of a unique opportunity because, unlike much of the work carried out by the Atomic Energy Commission and the Department of Defense in the past, most of the effort in science, and much of the technology is unclassified. It is thus available for broad participation throughout the many disciplines of the scientific community. This approach has enabled us to emphasize the necessity for brilliant minds in the physical sciences to gain in multidisciplinary teams, and has permitted a closer relationship between science and engineering through which new knowledge can be rapidly applied to engineering problems.

Finally, this multidisciplinary approach goes even one step beyond this because the life sciences are being joined with the physical sciences to develop within the university greater strength for effective research and its use in the solution of both space and other related national problems.

In an age when the present and future potential of scientific research is a major force in economic growth, the national resource which is being developed within the nation's universities in the conduct of the NASA program is a most valuable asset.

For more specific detail on the program as it is now constituted, Dr. Thomas L. K. Smull, Director of the Office of Grants and Research Contracts, is here and prepared to testify. He is in active charge of the program.